

REMARKS

I. The cited references do not support a prima facie case of obviousness.

The Office Action rejects the pending claims over Miyauchi, US 5,801,135, in view of Cook, WO 93/22491. Miyauchi differs from the present invention in two significant respects:

- (1) Miyauchi does not disclose non-alkaline or low-alkaline deinking; and
- (2) Miyauchi does not disclose the use of deinking surfactants that have an HLB greater than 13.

The Office Action cites the background discussion in Cook to overcome these deficiencies, but Cook simply discloses general conditions in which deinking is often practiced, and does not support a prima facie case of obviousness when combined with Miyauchi. As the MPEP states in section 2142, three basic criterion must be met to establish a prima facie case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. *Second*, there must be a reasonable expectation of success. *Finally*, the prior art reference (or references when combined) must teach or suggest all of the claim limitations.

- A. The references do not support a prima facie case of obviousness because they do not teach non-alkaline or low-alkaline deinking, individually or when combined.

As an initial matter, the cited references do not support a prima facie case of obviousness because, when combined, they do not teach all of the claim limitations, because they do not teach non-alkaline or low-alkaline deinking. The Office Action states that the “alkaline” deinking referenced in Cook includes “low-alkaline” deinking, but this position is inconsistent with how “alkaline” deinking is conventionally practiced in the pulp and paper industry. In the pulp and paper industry, alkaline deinking is conventionally practiced at pH values above 9.0, 10.0 or even 11.0. Cook’s “alkaline deinking” does not contemplate or teach the non-alkaline and low-alkaline deinking recited in the pending claims.

- B. The references do not support a prima facie case of obviousness because they do not contain a suggestion or motivation to use Miyauchi's process in a non-alkaline or low alkaline system.
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The references also do not support a prima facie case of obviousness because they do not contain any suggestion or motivation to combine the reference teachings. In particular, even if Cook's reference to "alkaline deinking" included "low alkaline deinking," the references still do not contain a teaching or suggestion to practice Miyauchi's process in such a low alkaline environment. Miyauchi teaches conventional alkaline deinking at pH levels that easily exceed 9. For example, Miyauchi's examples are practiced in slurries to which 1% caustic have been added. (Col. 8 at line 4.) It is well known in the art that the addition of this large amount of caustic creates alkaline conditions that exceed pH levels of 9 or even 10. There is no suggestion or motivation in Miyauchi or Cook to remove or reduce the caustic from Miyauchi's examples, and to practice Miyauchi's examples under non-alkaline or low-alkaline conditions. In the absence of such a suggestion or motivation, the references do not support a prima facie case of obviousness.

- C. The references do not support a prima facie case of obviousness because there is no reasonable expectation that Miyauchi's process could be used in a non-alkaline or low alkaline system.
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The references also do not support a prima facie case of obviousness because there is no reasonable expectation of success. In particular, a worker of ordinary skill would not expect Miyauchi's examples to work if the caustic was removed or reduced, and the process was practiced under non-alkaline or low alkaline conditions.

The conventional wisdom is that reducing the pH of the system worsens the efficiency of the system. For example, Table 3 gives the following results:

Composition		Bright	Eric
1	7.5#/ton Lionsurf 880 @ pH 9.0 (a blend of fatty acid and alkoxylated fatty acid having an HLB of less than 9)	50.2	516
2	7.5#/ton Lionsurf 880 @ pH 7.1	48.6	573

As can be seen, one observes worse Brightness and Eric values when the pH is dropped from 9.0 to 7.1, when using a conventional flotation deinking agent -- Lionsurf 880. These results prove that a skilled worker would not have expected to successfully reduce the pH in Miyauchi's examples to arrive at a non-alkaline or low alkaline process as claimed in the current application.

- D. The references do not support a prima facie case of obviousness because they do not teach deinking with a high HLB surfactant, individually or when combined.

The references also do not support a prima facie case of obviousness because, when combined, they do not teach a deinking process that uses a high HLB surfactant, as required by the pending claims. As a consequence, they do not "teach or suggest all of the claim limitations." MPEP 2142. The Office Action states that "a difference of 1 HBL of the fatty alcohol would still provide an effective deinking agent without any unexpected results," but this statement is not based on any teaching or suggestion in the references themselves. To support a prima facie case of obviousness -- "the prior art reference (or references when combined) must teach or suggest all of the claim limitations."

- E. The references do not support a prima facie case of obviousness because they do not contain a suggestion or motivation to use a high HLB surfactant in Miyauchi's process.

The references also do not support a prima facie case of obviousness because they do not contain a suggestion or motivation to use the high HLB surfactant of the present invention, having an HLB greater than 13. To the contrary -- Miyauchi only discloses fatty alcohol liquid surfactants that have an HLB "preferably in a range of 2 to 12, particularly 3 to 10." (Col. 3 at lines 47-45.) In the absence of a suggestion or motivation to use a high HLB surfactant in one of Miyauchi's examples, the references do not support a prima facie case of obviousness.

- F. The references do not support a prima facie case of obviousness because there is no reasonable expectation that a high HLB surfactant could successfully be used in Miyauchi's process.
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The references also do not support a prima facie case of obviousness because a skilled worker would not expect to be able to successfully use a high HLB surfactant in Miyauchi's process. To the contrary -- a skilled worker would expect to fail if he used a high HLB surfactant in Miyauchi's process. Before the present invention, skilled workers would not have used a high HLB surfactant in a flotation deinking process because higher HLB surfactants are known to hydrophilize ink particles which in turn makes them difficult to separate via flotation. Miyauchi acknowledges this mind-set by recommending a low HLB surfactant for his flotation process. In the absence of an expectation of success when using a high HLB surfactant in Miyauchi's process, from the references themselves, the references do not support a prima facie case of obviousness.

II. Unexpected results support the patentability of the present invention.

Finally, even if the combination of references in the Office Action supported a prima facie case of obviousness, there is abundant evidence of unexpected results in the specification to rebut the prima facie case, and to prove the patentability of the present invention. For example, Table 3 gives the following results:

Composition	pH	Composition Description	Bright	Eric
2	7.1	7.5#/ton Lionsurf 880 (a blend of fatty acid and alkoxylated fatty acid having an HLB of less than 9)	48.6	573
3	7.1	Example 1 (a blend of the fatty acid in Lionsurf 880 and an alkoxylated fatty alcohol having an HLB of greater than 13).	49.3	534

As can be seen, increasing the HLB of the surfactant in the deinking agent above 13, in a low-alkaline system having a pH of 7.1, improves the brightness and Eric values for the finished

paper. This surprising result could not have been expected from the prior art, which teaches that lower HLB surfactants are needed in flotation deinking systems.

The Office Action on page 7 states that "Applicant is invited to further explain why a lower brightness and higher Eric value provides surprising results from products used in the prior art that have an improved brightness and Eric values." The point that Applicant wishes to make is that it has been able to improve brightness and Eric values in a low-alkaline pH ($\text{pH} = 7.1$), by increasing the HLB of the surfactant used in the system. When the pH is held constant at 7.1, and a comparison is made between the low HLB compositions of the prior art and the high HLB compositions of the present invention, unexpected results are seen. This is clearly shown by a comparison of Compositions 2 and 3 in table 3 as reproduced above.

The Office Action focuses on the fact that table 3 reports better results for prior art composition 1 at pH 9.0 than composition 3 of the present invention at pH 7.1, but this is comparing apples to oranges. When holding the pH constant, and using the prior art composition at pH 7.1 (composition 2), the composition of the present invention plainly gave superior results.

In addition, Applicant refers the examiner to table 4 of the present application, wherein 6 lbs. of the composition from Example 6, at pH 7.1, gave a better Eric value than the prior art composition at pH 9.0. This example shows that applicant can obtain ink detachment in a non-alkaline environment that is equal to or better than the prior art compositions used under alkaline conditions.

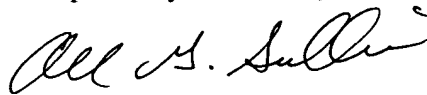
In summary, it is the improvement in brightness and Eric values observed when holding pH constant at 7.1, when comparing prior art compositions to the compositions of the present invention, that is surprising and that supports the patentability of the present invention.

CONCLUSION

For the above and foregoing reasons, Applicant respectfully requests that the pending rejections be withdrawn and that the application be allowed for issuance.

The Examiner is invited to contact the undersigned at 404-572-3513 should he have any questions concerning this application or response. To the extent any fee is due in connection with this submission, the Commissioner is hereby authorized to charge such fee to Deposit Account Number 11-0980.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Clark G. Sullivan", written in a cursive style.

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